known. These centres in consequence of overexertion, but also often without any appreciable cause, are thrown into a state of paralysis or irritation which gives rise to corresponding disturbances in the extremities. Perhaps this may at times arise simply as the result of a general increased nervousness which may have a hereditary origin. It is evident that besides those affections which are due to a functional disturbance of the cortex there are those in which anatomical lesions, whether of the central organs or of the peripheral nerves, may be the cause of the same symptoms as those now under consideration. Thus we may sometimes meet with cases of old almost cured hemiplegias in which as the only remaining disturbance a slight difficulty in writing or similar occupations may be present. The same may happen in slight disseminated scleroses of certain collections of fibres in the spinal cord, or, finally, as I have had occasion to observe repeatedly, in the initial stage of tabes, and the disturbance at the first glance may suggest to us writer's cramp. Hence we should, first of all, endeavor to decide whether the trouble is an independent affection or whether it is to be regarded merely as a symptom of an underlying disease.

The prognosis is usually unfavorable. Only in the rarest instances are we able to afford the patients any decided lasting relief, a fact of which we should inform the friends before taking charge of the case. Only when we are able to get hold of the patient in the earliest stages of the trouble and can insure him perfect rest and the removal of the exciting cause, such as writing, piano-playing, telegraphing, etc., for weeks and months, is it sometimes possible to effect an absolute cure. If this can not be done, and if the rest is not complete, the success of all our attempts becomes very uncertain and the result will usually be disappointing. We may try massage, as has been done also by some non-professional specialists with transient success. Galvanism, faradism, rubbing with different external applications, hydrotherapy, gymnastics, may be advised. The result is usually the same as if strychnine or atropine is injected hypodermically or if the different nervines be given internally for months. Writing may be facilitated by using a penholder passed through a potato or through a wooden ball fitted to the hollow of the hand, or by using Nussbaum's bracelet. The advice to educate the left hand to write is always good because it gives the right hand a rest. Yet the value is by no

means lasting, because the motor disturbance, as a rule, shows itself soon in that hand also, a fact which is an additional argument in favor of the central nature of the disease.

The simultaneous affection of several sensory nerves of the brachial plexus, analogous to the motor disturbance in the shoulder-arm palsy, is not common. When it does occur the pains are very violent and deprive the patient of the use of the extremity. The cervico-brachial neuralgia may affect all the sensory branches of the brachial plexus, so that the whole upper arm, forearm, and hand are painful; but it may also be confined to the area of distribution of one nerve, often the musculo-spiral or median (cf. Nourric, De la névralgie brachiale double, Thèse de Paris, 1889).

Painful points can sometimes be demonstrated in the region of the circumflex nerve over the scapula, of the median in the bend of the elbow, of the musculo-spiral in the lower third of the humerus, and of the ulnar at the internal condyle. Vasomotor and trophic changes may be entirely absent, yet the skin of the fingers not rarely looks glossy and atrophic ("glossy fingers"). Here, again, traumatism, mechanical pressure—by tumors, aneurisms, etc.—are the most prevalent causes of the neuralgia. It may occur reflexly after amputation of the fingers or the forearm. A bilateral neuralgia of this kind is suggestive of a spinal disease, more especially of pachymeningitis cervicalis hypertrophica.

The treatment is in the main the same as in other neuralgias. Besides narcotics the electrical treatment should be begun as soon as possible. Descending currents through the diseased nerve, as well as the application of the anode over the affected plexus, are to be recommended. The faradic brush is usually borne well and is of use, although the manipulation itself may not be very agreeable to the patient. In rare instances we must have recourse to energetic counter-irritants to the skin. We have repeatedly made very successful use of the *points de feu* with Paquelin's cautery.

Paræsthesias and anæsthesias are quite common in the distribution of the brachial plexus. They are not always confined to one nerve. Upper arm and forearm, the hands also, are frequently affected, particularly when the occupation necessitates overexertion of them—e. g., in brick-makers. Again they are caused by the action of cold and hot water, often

also by water containing lye (anæsthesia lavatricum, and the *mal des bassins* of the women engaged in unwinding the silk from the cocoons in the silk-spinning mills, etc.). For such patients the only remedy lies in abstention from this kind of work.

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II. Diseases of the Dorsal Nerves.

The anterior (ventral) divisions of the twelve dorsal nerves are called the intercostal nerves, since they run in the intercostal spaces. They supply the intercostal muscles, the levatores costarum, the serrati postici, and the three broad abdominal muscles. To the integument of the chest and abdomen they supply cutaneous branches. The posterior divisions of the dorsal nerves are divided into internal and external branches. The former are distributed to the deep muscles of the back, sending nerves to the rhomboidei and the latissimus dorsi; the latter, passing between the longissimus dorsi and the sacrolumbalis, also furnish numerous muscular branches, and, together with the internal, supply the skin of the back as far down as the crest of the ilium.

The sensory as well as the motor fibres of the dorsal nerves may become the seat of disease, but, and this is practically of much importance, the anterior, the intercostal nerves, are more subject to sensory disturbances, while the diseases of the posterior branches are almost exclusively motor affections.

The disease of the anterior branches, the so-called intercostal neuralgia, is found with relative frequency in the female sex, especially in those of middle age. Ætiologically, occupation and hard work in general are of some importance. Servant girls and women of the poorer classes suffer more